



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 10

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Seattle, Washington 98101-3140

DEC 17 2013

OFFICE OF
COMPLIANCE AND ENFORCEMENT

Reply to: OCE-184

Brian Anderson
Program Manager
The Boeing Company
M/C 1W-12
P.O. Box 3707
Seattle, Washington 98124-2207

Re: Risk-based Disposal Approval for the Duwamish Sediment Other Area and Southwest Bank Corrective Measure and Habitat Project Boeing Plant 2, 2014-2016 Sediments Work Elements, Seattle, Washington
TSCA ID No. WAD 00925 6819

Dear Mr. Anderson:

This letter constitutes approval under the authority of 40 Code of Federal Regulations (C.F.R.) § 761.61(c) for the cleanup, associated verification sampling and analysis, storage and disposal of certain polychlorinated biphenyl (PCB) remediation waste at The Boeing Company (Boeing) Plant 2 facility in Seattle, Washington. More specifically, this approval authorizes Boeing, with respect to the requirements for cleanup and disposal of PCB remediation waste at 40 C.F.R. § 761.61(c), to cleanup approximately 165,000 cubic yards of sediments and incidental debris from sediments in front of Plant 2, and to perform verification sampling, backfilling and post-backfilling monitoring following removal of contaminated material. This letter also documents EPA's evaluation of those project elements which will be conducted under requirements of 40 C.F.R. § 761.61 other than § 761.61(c). This approval and EPA's evaluation of the project under the Toxic Substance Control Act (TSCA) is wholly contingent upon EPA written approval of all phases and aspects of the project pursuant to the Resource Conservation and Recovery Act (RCRA) corrective action Administrative Order on Consent, EPA Docket No. 1092-01-22-3008(h) (Boeing Order, Reference 6¹).

This approval is the third in a series of related approvals that provide authorization for work under the Boeing Order subject to the requirements of TSCA. The first of these approvals was issued December 20, 2012 (Reference 2) based on Boeing's original application (Reference 1), and the second issued May 22, 2013 (Reference 4) based on Boeing's application for South Shoreline work elements (Reference 3).

This approval is issued to Boeing, the owner and operator of the Plant 2 facility, who has overall responsibility for implementation of this authorized work. This project will involve transloading of contaminated sediments from barges to rail cars or trucks, and off-site disposal at facilities

¹ All references are to those in Enclosure 1.

other than those owned or operated by Boeing. This approval is not issued to any of the owners or operators of these off-site facilities. The approval does, however, include consideration of how PCB remediation waste subject to this approval will be transported, and disposed of to ensure that work subject to this approval satisfies the standard of no unreasonable risk of injury to health or the environment at 40 C.F.R. § 761.61(c)(2).

This written decision for a risk-based method for cleanup, storage, and disposal of PCB remediation waste is based on Boeing's application for a risk-based disposal approval (RBDA) consisting of the documentation identified in Enclosure 1. All sections of the RBDA application, including those referenced in this approval, are incorporated by reference. In granting this approval, EPA finds that the proposed cleanup and verification of PCB remediation waste, subject to the conditions below, will not pose an unreasonable risk of injury to health or the environment. Boeing shall ensure that activities conducted pursuant to this approval are in full compliance with conditions of the approval. The terms and conditions of this approval are established pursuant to 40 C.F.R. § 761.61(c) and enforceable under the Toxic Substances Control Act (TSCA). Any actions which deviate from the terms and conditions of this approval may result in administrative, civil, or criminal enforcement in accordance with Sections 16 and 17 of TSCA, 15 U.S.C. §§ 2615 and 2616.

Conditions

1. Boeing is authorized to perform cleanup of PCB remediation waste, associated verification sampling, backfilling and post-backfilling monitoring as documented in Boeing's RBDA application (Reference 5) pursuant to the specific provisions of 40 C.F.R. § 761.61 documented in Enclosure 2 to this approval, and as approved by EPA under the Boeing Order (Reference 6) that are associated with the Construction Season 2 (CS2) dredging work elements. (See Figure 1 in Appendix A the RBDA application, Reference 5). Dredging and debris removal subject to this approval must be completed by March 30, 2014, with shipment for off-site disposal of PCB remediation waste subject to this approval to be complete by a target date of 60 days following completion of excavation activities. Boeing may request an extension to these dates.
2. At least 60 days prior to the scheduled start of Construction Season 3 (CS3), or at such other time as agreed to by EPA, Boeing will provide EPA with a summary report of activities during CS2, issues or problems that were encountered, documentation of any changes or updates to plans for the CS2 activities. This report will contain a request for modification of this approval pursuant to Condition 16 to include authorization for CS3 construction activities, and to make such other changes as necessary or appropriate. This condition supersedes Condition 2 in the December 20, 2012 RBDA (Reference 2) with respect to reporting requirements applicable to the 2013/2014 and 2014/2015 construction seasons.
3. This approval will remain in effect for the duration of the Boeing Order (Reference 6) with respect to work requirements subject to the requirements of 40 C.F.R. § 761.61. Following completion of such work under the Boeing Order, including post-backfilling monitoring, Boeing may provide a written request to EPA to terminate this approval.

4. Boeing will ensure that all trucks or rail cars used to transport PCB remediation waste under this approval or as otherwise authorized pursuant to 40 C.F.R. § 761.61 will have adequate liners, or are otherwise sufficiently watertight, to prevent any incidental liquids from leaking from the boxes or containers during transport.
5. Boeing will ensure that best management practices are used for gravity dewatering of dredged sediments within sediment barges as described in Reference 5 for purposes of minimizing the quantity of residual liquids remaining in sediments when transferred to the Transload facility, consistent with project schedules, equipment limitations, and properties of the dredged sediments.
6. Boeing is authorized to add absorbents (e.g., cement kiln dust) to dredged sediments within the Transload facility for purposes of absorbing residual free liquids remaining in dredged sediments. Sufficient absorbent material will be added and appropriately mixed to eliminate visible free liquids before removal from the vault. Boeing is not authorized to add absorbents to any other aqueous PCB remediation waste at the Transload facility, such as truck/rail car wash water, storm water collected from areas outside of the containment vault which may have been in contact with contaminated sediments, or final decontamination water from the Transload facility generated pursuant to Condition 7 of this Approval. All aqueous PCB remediation waste generated as part of this project at the Transload facility other than residual free liquids in dredged sediments must be managed according to one of the following options:
 - Collected on-site and shipped via Department of Transportation-compliant containers or tank trucks to an off-site facility for decontamination as required and discharge pursuant to 40 C.F.R. § 761.79(b)(1)(ii) or (iii);
 - Collected, and decontaminated (pre-treated) on-site as required and discharged to the King County Publically Owned Treatment Works. If this option is selected, Boeing must provide EPA with a current copy of King County's pretreatment permit that demonstrates the permit contains an enforceable limit for PCBs, prior to any discharge to the King County POTW;
 - Collected on-site, decontaminated on-site and sampled as necessary to demonstrate compliance with the decontamination standard at 40 C.F.R. § 761.79(b)(1)(iii), and added to sediments for stabilization in the containment vault as "clean" water authorized for unrestricted use;
 - Collected on-site, decontaminated on-site and sampled as necessary to demonstrate compliance with the decontamination standard at 40 C.F.R. § 761.79(b)(1)(iii), and shipped to the Columbia Ridge landfill for use as "clean" water for dust control as permitted by the Oregon Department of Environmental Quality.

Prior to the placement of any PCB remediation waste in the Transload facility, Boeing will provide EPA with a current copy of the Solid Waste Facilities Permit for Storage and Treatment Piles as an update to the copy of Permit PR0034434 provided in Boeing's application for CS2.

Any sampling and analysis pursuant to this condition that is not otherwise subject to a written sampling and analysis plan approved by EPA under the Boeing Order must be conducted under a written sampling and analysis plan, and a project-specific quality assurance project plan that ensures data will be of acceptable quantity and quality for their intended decision-making uses. Boeing will make such plans available to EPA upon request.

Water generated from decontamination activities at the Transload facility must be managed according to one of the options enumerated above. Any aqueous PCB Remediation Waste which Boeing voluntarily elects to remove from the containment vault may be managed according to any of the above options.

7. All equipment and structures that have been in contact with liquid or non-liquid PCB remediation waste subject to this approval must be disposed of or decontaminated following completion of work under this approval. All disposable equipment or materials must be disposed of in a facility permitted, licensed or registered by a State to manage municipal solid waste subject to 40 C.F.R. Part 258, or municipal non-hazardous waste subject to 40 C.F.R. §§ 257.5 through 257.30, as applicable. Non-disposable equipment and structures must be decontaminated using mechanical means or pressure washing to achieve a "clean debris surface" as defined in 40 C.F.R. § 268.45, Table 1, footnote 3. Water generated from decontamination activities may be managed in the dredge return water treatment system or according to either of the first two bulleted options in Condition 6.

Boeing will ensure that any decontamination conducted pursuant to this approval will be conducted in compliance with the requirements of 40 C.F.R. 761.79(e)-(g).

8. Boeing is authorized to dispose of bulk PCB remediation waste with as-found PCB concentrations < 50 ppm in a facility permitted, licensed or registered by a State to manage municipal solid waste subject to 40 C.F.R. Part 258, or municipal non-hazardous waste subject to 40 C.F.R. §§ 257.5 through 257.30, as applicable.
9. Prior to rail or truck shipment of any PCB remediation with total PCB concentrations less than 50 ppm for disposal as alternate daily cover at a landfill authorized to receive such material pursuant to Condition 8, Boeing will provide to EPA a copy of the approval or other documentation provided to the receiving landfill by the applicable jurisdiction (jurisdictional health department or state agency) to accept and dispose of PCB remediation waste as alternate daily cover..

If such approval or documentation establishes a demonstration or evaluation period associated with disposal of PCB remediation waste as alternate daily cover, Boeing will provide a copy of any communication related to this demonstration period to EPA pursuant to Condition 17 during the demonstration period, as well as any evaluation or disposition of the demonstration (e.g., termination or extension of the demonstration approval, or issuance of any final approval for acceptance of PCB remediation waste for disposal as alternate daily cover).

If alternate daily cover is reasonably expected to remain stockpiled at the receiving landfill for more than 30 days, Boeing will provide written documentation to EPA that appropriate controls are in place to address potential wind dispersal of stockpiled alternate daily cover, and that appropriate run-off controls are in place. Acceptable documentation includes, but is not limited to, a landfill operating plan and associated appendices covering storm water management and fugitive dust control.

10. Boeing shall document the surveyed elevation of a fixed reference point on each piezometer to an accuracy of 0.3 cm (0.01 foot). Boeing shall perform monitoring of the retention basin piezometers documented in Reference 7 no less frequently than weekly beginning with the start of dredging operations and ceasing once all dredge return water and accumulated solids have been removed from the basin at the end of Construction Season 2. All measurements shall be recorded relative to the fixed reference point on each piezometer. Boeing shall concurrently monitor the elevation of the free liquid surface in the basin, referenced to the same datum as the fixed reference points on the various piezometers, and for piezometers 1, 2, 7 and 8 documented in Figure 2 in Reference 7, the level of any ponding water external to the retention basin in the vicinity of each piezometer, with respect to the fixed reference point of the corresponding piezometer. Boeing shall provide notice to the EPA project manager according to Condition 17 if any of the following conditions are met:
 - For Piezometers 1, 2, 7 and 8, report any positive differential water level greater than one inch (1.0") between the piezometer and any water ponding external to the retention basin OR any ponding water external to the retention basin following pumping of accumulated water that is not explained by precipitation and that is above the minimum pumping level.
 - For Piezometers 3, 4, 5 and 6, report any water level above the minimum detectable level for the instruments used,
11. Boeing will ensure that a copy of this approval is provided to members of its field engineering team (AMEC Environment and Infrastructure, Inc. and its subconsultants, Dalton, Olmsted and Fuglevand and its subcontractors, Envirocon, Inc. and its subcontractors, Waste Management, Inc. (Field Team) responsible for conducting work subject to requirements of the approval. Boeing will ensure that any contracts it issues to members of the Field Team and any associated contract directions are consistent with the requirements of this approval. Boeing is responsible for ensuring compliance with this TSCA Risk Based Disposal Approval.
12. Boeing will ensure that all field work associated with this project conducted by Boeing or its Field Team is conducted under written site-specific health and safety plans. Boeing will ensure that these plans document appropriate training and personal protective equipment required for all personnel that may be exposed to PCBs during work associated with this project. Boeing will make available copies of such plans to EPA upon request.

13. Nothing in this approval relieves Boeing of any obligation to comply with the Boeing Order, any other EPA or Ecology administrative action, or any statutory requirements, or rules or regulations applicable to the activities subject to this approval.
14. Within seven (7) days following the effective date of this approval, Boeing will provide EPA with written or e-mail notice of its project manager responsible for overall implementation of work subject to this approval. The initial EPA TSCA project manager is identified in Condition 17. The respective project managers will be responsible for timely and routine communication regarding implementation of this approval, including notification pursuant to Condition 15. For matters otherwise reportable to the EPA RCRA project manager under the Boeing Order, concurrent notification via e-mail is acceptable and encouraged.
15. If at any time before, during, or after conduct of activities subject to this approval, Boeing possesses or is otherwise made aware of any data or information (including but not limited to site conditions that differ from those presented in the application) that activities approved herein may pose an unreasonable risk of injury to health or the environment, Boeing must report such data or information via facsimile or e-mail to EPA within five working days at the project manager level, and in writing to the Regional Administrator within 30 calendar days of first possessing or becoming aware of such data or information. At his or her sole discretion, the EPA project manager may waive the written reporting requirement for those issues that are determined to be minor, or can be timely resolved without modification of this Approval. Boeing shall also report in the same manner, new or different information related to a condition or any element of the approved activities if the information is relevant to this approval. EPA may direct Boeing to take such actions it finds necessary to ensure the approved storage activities do not pose an unreasonable risk of injury to health or the environment. Boeing shall follow such direction until written approval is obtained from the EPA that finds the condition(s) requiring such direction no longer poses an unreasonable risk of injury to health or the environment.
16. EPA reserves the right to modify or revoke this approval based on information provided pursuant to Condition 15, or any other information available to EPA that provides a basis to conclude that activities covered by this approval pose an unreasonable risk of injury to health or the environment. Boeing may request modification of this approval by providing a written request to EPA. If the EPA agrees with a request for modification, the EPA will provide written approval to Boeing. Prior to obtaining written approval of a modification request, Boeing shall comply with the existing approval conditions.
17. Submissions required by this approval shall be provided to EPA as follows:

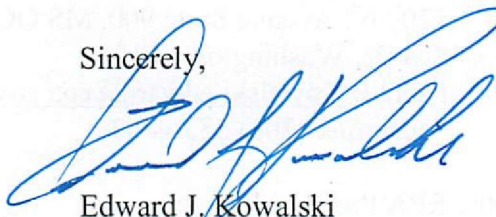
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With copies to the EPA Project Manager:

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Should you have any questions or comments, please contact Dave Bartus at (206) 553-2804, or Bartus.dave@epa.gov.

Sincerely,



Edward J. Kowalski
Director

Enclosures

1. References
2. Statement of Basis

cc: Michael J. Gleason, The Boeing Company
Andrew Smith, Ecology Northwest Regional Office
Jim Sifford, King County Industrial Waste Program
Peggy Rice, King County Industrial Waste Program
Heather Trim, People for Puget Sound
Allison O'Sullivan, Suquamish Tribe
Denise Taylor, Suquamish Tribe
Glen St. Amant, Muckleshoot Tribe
John Wakeman, U.S. Army Corps of Engineers
Olivia Romano, U.S. Army Corps of Engineers
David Templeton, AnchorQEA, LLC
Amy Essig Desai, Farallon Consulting
Jessica Winter, National Oceanic and Atmospheric Administration
Douglas Welch, Oregon Department of Environmental Quality
Melissa Gildersleeve, Washington State Department of Ecology
Add Chelan-Douglas County Reference

Enclosure 1

References

- 1) Cover letter and Work Plan, "TSCA Risk-Based Disposal Application, Duwamish Sediment Other Area and Southwest Bank Corrective Measure and Habitat Project, Boeing Plant 2, Seattle/Tukwila, WA" dated November 16, 2012.
- 2) Letter, "Risk-based Disposal Approval for the Duwamish Sediment Other Areas and Southwest Bank Corrective Measure and Habitat Project, Boeing Plant 2, Seattle, Washington, TSCA ID No. WAD 00925 6819," from Edward J. Kowalski, EPA to Michael L. Verhaar, The Boeing Company, dated December 20, 2012.
- 3) Cover letter and Work Plan, "TSCA Risk-Based disposal Approval Application, South Shoreline Work Elements, Duwamish Sediment Other Area and Southwest Bank Corrective Measure and Habitat Project, Boeing Plant 2, Boeing Plant 2, Seattle/Tukwila, Washington, April 2013.
- 4) Letter, "Risk-based Disposal Approval for the Duwamish Sediment Other Area and Southwest Bank Corrective Measure and Habitat Project, Boeing Plant 2, South Shoreline Work Elements, Seattle, Washington, TSCA ID No. WAD 00925 6819," from Edward J. Kowalski, EPA to Michael L. Verhaar, The Boeing Company, dated May 22, 2013.
- 5) Cover letter and Work Plan, "TSCA Risk-Based Disposal Approval Application, Duwamish Sediment Other Area and Southwest Bank Corrective Measure and Habitat Project, Dredging Work Elements (2014-2016), Boeing Plant 2, Seattle/Tukwila, Washington," dated November, 2013.
- 6) Resource Conservation and Recovery Act (RCRA) Administrative Order on Consent, EPA Docket No. 1092-01-22-3008(h).
- 7) Memorandum, "Proposed Modifications to the Dredge Water Treatment System, Boeing Plant 2, Seattle, Washington," AMEC Environment and Infrastructure, dated October 25, 2013.
- 8) Final Decision and Response to Comments for Boeing Plant 2 Sediments, Duwamish Sediment Other Area and Southwest Bank, Boeing Plant 2, Seattle/Tukwila, Washington, transmitted from U.S. EPA Region 10 to Mr. William Ernst and Mr. Michael Gleason, Resource Conservation and Recovery Act (RCRA) Docket No. 1092-01-22-3008(h) EPA ID No. WAD 00925 6819.
- 9) Work Plan, "Final Design Report, Duwamish Sediment Other Area and Southwest Bank Corrective Measure and Habitat Project, Boeing Plant 2, Seattle/Tukwila, Washington," AMEC Environmental & Infrastructure, Inc., Dalton, Olmstead & Fuglevand, & Floyd|Snider, November, 2012.
- 10) Work Plan, "Final Construction Statement of Work, Duwamish Sediment Other Area and Southwest Bank Corrective Measure and Habitat Project, Boeing Plant 2, Seattle/Tukwila, Washington," AMEC Environmental & Infrastructure, Inc., Dalton, Olmstead & Fuglevand, & Floyd|Snider, December, 2012.
- 11) Department of the Army, Corps of Engineer Permit NWS-2011-0384, dated December 2012.
- 12) Letter, "Boeing Plant 2 RCRA Corrective Measure 40 CFR 761.61(a) Notification and certification of self-implementing procedure for the disposa [sic] of concrete construction debris with PCB concentrations less than 50 mg/kg.," from Michael L. Verhaar, The Boeing Company, to Edward Kowalski, EPA, dated April 9, 2013.
- 13) Letter, "Boeing Plant 2 Corrective Measure- 40 C.F.R. § 761.61(a) Notification and Certification of self-implementing procedure for the disposal of concrete construction debris

with PCB concentrations less than 50 parts per million,” from Edward J. Kowalski, EPA to Michael L. Verhaar, The Boeing Company, dated May 22, 2013.

- 14) E-mail, “FW: Drawings for 9 am,” from Brian Anderson, The Boeing Company, to Dave Bartus, EPA, with attachments (4), dated December 10, 2012.
- 15) E-mail, “PCB Data Update,” from Patrick Hsieh, AMEC, to Dave Bartus, EPA, with attachment, dated December 10, 2013.

Enclosure 2

Statement of Basis

Introduction

Boeing Plant 2 is located at 7755 East Marginal Way South in Seattle, Washington, with portions of the facility extending into Tukwila, Washington. The 107 acre site is bounded by the Duwamish Waterway to the west; Webster Street, Slip 4, and property owned by Crowley Marine Corporation to the north (excluding public streets and ways); the AIRGAS NOR PAC plant and East Marginal Way South to the east; and the Jorgensen Forge Company (Jorgensen Forge) to the south.

Beginning in 1936, The Boeing Company (Boeing) has manufactured airplane parts at Plant 2. Manufacturing activities have ceased at the Plant 2 facility, and a number of buildings have been removed. The Plant 2 facility, owned and operated by Boeing, is being cleaned up pursuant to the Administrative Order on Consent (Boeing Order, Reference 6) issued to Boeing in 1994 by the U.S. Environmental Protection Agency (EPA) under authority of RCRA Section 3008(h), as amended (42 U.S.C. 6928(h)). Certain aspects of the Plant 2 cleanup relating to polychlorinated biphenyls (PCBs) are also subject to the requirements of the Toxic Substance Control Act (TSCA), 15 U.S.C. §2601 et seq. (1976) and implementing regulations at 40 Code of Federal Regulations (C.F.R.) Part 761.

Soils, sediments, debris and structures in the waterway in front of (to the west of) Plant 2, and the adjacent shoreline have been documented to be contaminated with polychlorinated biphenyls (PCBs), as well as other constituents of concern. Under the Boeing Order, Boeing has been and will be conducting corrective measures to remove approximately 260,000 cubic yards (cy) of sediments, soils, debris, and structures from the waterway in front of Plant 2 and the adjacent Plant 2 shoreline. The materials are contaminated with PCBs and other constituents of concern. The Corrective Measures footprint is designed to remove soil, sediments, debris and structures containing PCBs at concentrations greater than 0.130 milligrams per kilogram (mg/kg) or parts per million (ppm). Three localized areas offshore of the SW Bank contain PCBs at concentrations greater than 50 ppm; they represent a total of approximately 260 cy (or less than 0.1 percent) of soil/sediment. The remaining volume of soil/sediment contains PCBs at concentrations less than 50 ppm, with an average concentration of less than 1 ppm.

This approval is the third in a series of related approvals that provide authorization for work under the Boeing Order subject to the requirements of TSCA. The first these approvals was issued December 20, 2012 (Reference 2) based on Boeing's original application (Reference 1), and the second issued May 22, 2013 (Reference 4) based on Boeing's application for South Shoreline work elements (Reference 3). The remainder of this Statement of Basis documents EPA's review of Boeing's RBDA application and EPA's basis for issuing this risk-based disposal approval.

EPA's Evaluation of Boeings Risk-Based Disposal Approval Application

In evaluating Boeing's request for a risk-based disposal approval, EPA has considered the following issues:

- Relationship among project approvals
- Scope of the requested approval
- Specific elements of the cleanup project

Relationship between RCRA, Rivers and Harbors Act/ Federal Water Pollution Control Act (Clean Water Act), and TSCA requirements and project approvals

The soil and sediment cleanup associated with this project is subject to multiple authorities and permits². Those that most directly relate to the requirements applicable to cleanup of PCB remediation waste as part of this project include the Resource Conservation and Recovery Act (RCRA), the Rivers and Harbors/Clean Water Act, and the Toxic Substances Control Act (TSCA) and the permits or approvals associated with each.

A brief summary of each of these key sets of requirements is presented in the following paragraphs, along with a discussion of how each relates to EPA's basis for establishing the requirements of this risk-based disposal approval.

Summary of RCRA Requirements

As noted in the Introduction section, all aspects of cleanup at the Boeing Plant 2 facility are being managed as corrective action under the RCRA through the Boeing Order. Through this authority, EPA has performed site characterization as necessary to document the nature and extent of contamination in the project area, selected the final remedy and established sediment cleanup standards (Reference 8), and has approved the work plan for the various elements of the final remedy (References 9 and 10), including post-cleanup monitoring. Corrective action under the Boeing Order addresses any hazardous waste as defined in Section 1004(5) of RCRA, which include PCBs.

Summary of Rivers and Harbors/Clean Water Act Requirements

The Rivers and Harbors Act of 1899 (33 C.F.R. §§ 321-329) gives the United States Army Corps of Engineers (USACE) regulatory authority over construction activities in all navigable waters of the United States. Section 10 of the act is intended to protect these waters for purposes of navigation and general public benefit. This regulation is administered through the Section 10 Permit application process. Section 404 of the Clean Water Act (33 U.S.C. § 1344) prescribes procedures to be followed before dredged or fill materials can be discharged into national water resources (including wetlands) and, as such, provides regulatory guidelines and permit requirements for dredging and filling activities. Administration of the requirements of Section 404 is vested in the USACE and is handled in conjunction with the Section 10 Permit process.

² An enumeration of the various permits and approvals applicable to this project is presented in Table 1 of the Final Design Report (Reference 4).

When both a Section 10 Permit and a Section 404 (of the Clean Water Act) Permit are required, as is the case for the Project, they are typically considered and administered together by the USACE as a Section 10/404 Permit (Reference 11). Excavated materials within the Project area regardless of construction sequencing (either dredged from barges in the Waterway or excavated with equipment from the shoreline) will be governed by the requirements of the Section 10/404 permit and will be managed as “dredged material” per the provisions of the Section 10/404 permit.

EPA notes that the scope of the USACE Section 10/404 permit only applies to dredging and filling activities within, or activities that have discharges to waters of the United States. Waters of the United States includes navigable waters, non-navigable waters, and wetlands. The USACE permit does not extend to off-site disposal of contaminated sediments, soils, structures or debris where disposal is not in waters of the U.S. or there are no discharges to waters of the United States. Therefore, off-site disposal of contaminated soils, sediments, structures or debris which are dredged or excavated under the USACE 10/404 permit will be disposed of under TSCA requirements as established in this risk-based disposal approval.

Boeing has included language in Section 1.3.1 of the “Final Design Report Duwamish Sediment Other Area and Southwest Bank Corrective Measure and Habitat Project, Boeing Plant 2, Seattle/Tukwila, Washington” (Reference 9) stating that:

“The dredging, excavation, transportation, and management of PCB remediation waste with concentrations of PCBs less than 50 ppm will be performed in accordance with a permit issued by the USACE (Section 10/404), thus meeting the requirements in 40 CFR 761.61(b)(3) under the performance based exemption.”

EPA agrees with this statement to the extent that project activities are in fact covered by the USACE Section 10/404 permit, and are therefore authorized under TSCA pursuant to 40 C.F.R. § 761.61(b)(3). Activities covered by the USACE Section 10/404 permit include all in-water dredging and barge transportation of sediments and debris containing 50 ppm total PCBs, excavation of shoreline sediments, soils, structures and debris, and on-site stockpiling of these materials containing <50 ppm total PCBs, and treatment of return flow water from dredged sediments and shoreline sediments containing <50 ppm total PCBs. These activities do not, however, include any subsequent management (storage, processing for disposal, or transportation) or final off-site disposal of <50 ppm sediments, soils, structures and debris, or any activities related to cleanup, processing for disposal, transportation or off-site disposal of sediments containing ≥ 50 ppm total PCBs. These activities subsequent to those covered by the USACE Section 10/404 permit are subject to requirements of this approval, not the self-implementing authorization of 40 C.F.R. § 761.61(b)(3). A further discussion of the requirements of 40 C.F.R. § 761.61(b)(3) is provided in the “Summary of TSCA requirements” in the following section.

Summary of TSCA requirements

As discussed in the section “Scope of the Requested Approval,” soils, sediments, structures and debris within the project area are generally considered to meet the definition of PCB remediation waste, and are subject to the requirements for cleanup and disposal of PCB remediation waste at 40 C.F.R. §

761.61³. Under 40 C.F.R. § 761.61 rules, spills or releases of PCBs may be cleaned up using the self-implementing procedures of 40 C.F.R. § 761.61(a), PCB remediation waste may be disposed of (or in some cases, managed) under the performance-based standards of 40 C.F.R. § 761.61(b), or the sampling, cleanup, storage and disposal of PCB remediation waste may be conducted under a risk-based disposal approval issued by EPA pursuant to 40 C.F.R. § 761.61(c). According to 40 C.F.R. § 761.61(a)(1)(i)(A), the self-implementing procedures of 40 C.F.R. 761.61(a) may not applied to cleanup of PCBs in sediments⁴ in marine and freshwater ecosystems⁵. In some instances, decontamination of PCB remediation waste may be accomplished according to decontamination standards and authorization at 40 C.F.R. § 761.79.

Boeing is requesting that EPA provide a written risk-based determination approval to document that the overall action will also meet TSCA requirements, including processing for disposal and disposal requirements. As further explained in the following section, EPA is evaluating the risks of PCBs on a cradle-to-grave approach, including transloading and transportation, and final land disposal, as part of its evaluation of whether or not the proposed work satisfies the TSCA standard of no unreasonable risk of injury to health or the environment. EPA is basing this evaluation on application of a combination of performance-based requirements pursuant to 40 C.F.R. § 761.61(b)(3), and on an application of the risk-based disposal approval authority of 40 C.F.R. § 761.61(c).

Scope of the requested approval

Under TSCA, sediments within the project scope that have been impacted by PCBs satisfy the definition of "PCB Remediation Waste" at 40 C.F.R. § 761.3. This definition includes the following elements:

- Materials disposed of prior to April 18, 1978 that are currently at concentrations \geq 50 ppm PCBs, regardless of the concentration;
- Materials which are currently at any volume or concentration where the original source was \geq 500 ppm PCBs beginning on April 18, 1978, or \geq 50 ppm PCBs beginning on July 2, 1979; and
- Materials which are currently at any concentration if the PCBs are spilled or released from a source not authorized for use under [40 C.F.R Part 761].

The TSCA regulations include a provision at 40 C.F.R. 761.50(b)(3)(iii) that states:

"The owner or operator of a site containing PCB remediation waste has the burden of proving the date that the waste was placed in a land disposal facility, spilled, or otherwise released into the environment, and the concentration of the original spill."

³ One exception is soils associated with the North Shoreline area adjacent to Slip 4 and Building 2-122. See the discussion of these soils in the section of this approval entitled "Scope of the requested approval" in the Statement of Basis accompanying the original risk-based disposal approval (Reference 2).

⁴ While the cited prohibition is specific to cleanup of sediments contaminated with PCBs, EPA interprets this prohibition to extend to soils, structures and debris within this project area, since they are essentially co-located with sediments and pose essentially the same health and environmental risks as do contaminated sediments.

⁵ EPA notes that Boeing requested, and EPA approved, of a self-implementing cleanup specific to removal and disposal of concrete debris associated with the slab overhang of the 2-40s buildings (See References 12 and 13). This exercise of the self-implementing cleanup authority of 40 C.F.R. 761.61(a) is not in conflict with the general exclusion of sediments in marine and fresh water from the appropriate scope of self-implementing cleanups.

Boeing's RBDA application does not provide documentation of either the source concentration or the date(s) of spills or releases that have impacted the DSOA project area. In these circumstances, EPA conservatively assumes that all media/materials affected by a spill or release meet the definition of PCB remediation waste, and must be cleaned up and disposed of according to the requirements of 40 C.F.R. § 761.61. On this basis, EPA considers all sediment, soils and debris subject to cleanup under the Boeing Order to meet the definition of PCB remediation waste, and subject to requirements of this approval with the exception of soils associated with the North Shoreline area adjacent to Slip 4 and Building 2-122. See the discussion of this exception in the Statement of Basis accompanying the original risk-based disposal approval (Reference 2).

The document "Final Construction Statement of Work" (Reference 10) indicates that the overall project will be conducted over the course of three construction seasons, the first of which began in January, 2013. Figures C-12 through C-14 in Appendix A of Reference 10 document specific elements of the project that will be completed in each of the three construction seasons⁶. Given the complex nature of this project, it is likely that revisions to the work scheduled for the second and third construction seasons may occur. Also, EPA has requested clarification of several details related to management of sediments, debris and structures⁷ containing PCBs at concentrations ≥ 50 ppm documented in Section 3.0 of the Boeing's original RBDA application (Reference 1). This work was originally expected to occur during the second construction season, but is now scheduled for work during CS3. Rather than delay approval of work scheduled during the CS2, and to accommodate EPA's on-going review of Boeing's revised proposal for managing PCBs with as-found concentrations ≥ 50 ppm, EPA is electing to provide authorization only for those project elements scheduled for the CS2, as documented in Figure 1 in Appendix A of the RBDA application, Reference 5.

Project activities subject to the requirements of 40 C.F.R. § 761.61 can be generally divided into the following categories:

- Characterization for purposes of defining the nature and extent of contamination;
- Developing, assessing, and selecting among remedial alternatives;
- Dredging and excavation of contaminated sediments, soils, structures, and debris contaminated with PCBs at concentrations < 50 ppm, including dewatering;
- Dredging and excavation of contaminated sediments, structures and debris contaminated with PCBs at concentrations ≥ 50 ppm, including dewatering;

⁶ Work initially anticipated to be conducted during the third construction season is now considered to be divided between Construction Season 2 (CS2) and Construction Season 3 (CS3).

⁷ This approval, and EPA's evaluation of the project, encompasses all sediments, soils, structures and debris subject to cleanup under the Boeing Order. The characterization of the nature and extent of PCBs within the project area provided by Boeing as part of the RBDA application indicates that the only areas with total PCBs at as-found concentrations ≥ 50 ppm are within sediments, not soils. For this reason, EPA's consideration of cleanup of PCBs with as-found concentrations ≥ 50 ppm is documented here as applying to sediments, structures and debris, but not soils. Cleanup of soils within the overall project scope were addressed in the second RBDA, Reference 4, and are not further discussed in this approval for work during CS2.

EPA notes that Boeing's RBDA application does not explicitly document any expectation of structures or debris being associated with sediments containing total PCBs at concentrations ≥ 50 ppm. Since either debris or structures could be encountered, however, during cleanup of sediments containing total PCBs at concentrations ≥ 50 ppm, EPA is including both structures and debris in its consideration and approval of cleanup and disposal of sediments containing total PCBs at concentrations ≥ 50 ppm.

- Conducting sampling to verify completion of excavation/dredging activities, and to perform environmental monitoring during cleanup activities;
- Backfilling and post-backfilling monitoring;
- Treatment and discharge of return water from < 50 ppm sediments, soils, structures and debris;
- Treatment and discharge of return water from ≥ 50 ppm sediments, structures and debris;
- Transloading activities, including absorption/stabilization of residual liquids for sediments, soils, structures and debris contaminated with PCBs <50 ppm;
- Final disposal of soils, sediments, structures and debris contaminated with PCBs at concentrations < 50 ppm, including use of sediments as alternate daily cover⁸;
- Final disposal of sediments, structures and debris contaminated with PCBs at concentrations ≥ 50 ppm;
- Decontamination of structures and equipment in contact with PCB remediation waste during cleanup activities.

The following section provides an overview of which of the key regulatory authorities/permits that apply to each of the above categories, the specific TSCA regulatory authority that authorizes work within each category, and for work subject to this risk-based disposal approval, the principle source of requirements used by EPA to establish specific requirements under the risk-based disposal approval. In presenting this overview, EPA notes that all regulatory requirements identified in the table are in addition to requirements of the Boeing Order.

Specific elements of the cleanup project

Characterization for purposes of defining the nature and extent of contamination

Characterization of the nature and extent of PCB contamination for purposes of evaluating, selecting, and verifying completion of the sediment and soils remedy has been completed as part of the RCRA corrective action process under the Boeing Order. EPA accepts the results of this work as meeting the no unreasonable risk standard for cleanup of PCB remediation waste under 40 C.F.R. § 761.61(c).

Developing, assessing, and selecting among remedial alternatives

The development and assessment of remedial alternatives, and selection of the final corrective action remedy, has been completed as part of the RCRA corrective action process under the Boeing Order. The final remedy selection was documented in Reference 8. EPA accepts the results of this work as meeting the no unreasonable risk standard for cleanup of PCB remediation waste under 40 C.F.R. § 761.61(c).

Dredging and excavation of contaminated sediments, soils, structures and debris contaminated with PCBs at concentrations < 50 ppm, including dewatering

40 C.F.R. § 761.61(b)(3) provides that:

⁸ Use of structures or debris generated as part of cleanup evaluated under this approval would not be suitable for alternate daily cover. Therefore, EPA is explicitly excluding structures and debris from the materials conditionally authorized for disposal as alternate daily cover by this approval.

Any person may manage or dispose of material containing <50 ppm PCBs that has been dredged or excavated from waters of the United States:

- (i) In accordance with a permit that has been issued under section 404 of the Clean Water Act, or the equivalent of such a permit as provided for in regulations of the U.S. Army Corps of Engineers at 33 CFR Part 320.

Since requirements for dredging of sediments, and excavation of soils, containing PCBs with total PCBs <50 ppm are included in the USACE Section 10/404 permit issued for this project (Reference 8), these same dredging and excavation activities also are authorized under TSCA pursuant to 40 C.F.R. § 761.61(b)(3). This approach to identifying appropriate TSCA authorization for these project elements is consistent with language in Boeing's RBDA application, Reference 2. EPA notes that requirements for these project elements, as well as all project elements, are also included under the Boeing Order

Dredging and excavation of contaminated sediments, structures and debris contaminated with PCBs at concentrations ≥ 50 ppm, including dewatering

Although dredging and excavation of contaminated sediments, structures and debris with total PCBs at concentrations ≥ 50 ppm are subject to the USACE 10/404 permit (Reference 11), such activities are not within the scope of the performance-based authorization at 40 C.F.R. § 761.61(b)(3). Boeing has proposed a revision to how project areas containing PCBs ≥ 50 ppm in Section 3.1 of the RBDA application for CS 2 (Reference 5). EPA has not made a final decision regarding this revision to project planning, and is therefore not providing authorization for cleanup or subsequent disposal of PCBs ≥ 50 ppm at this time. EPA expects to provide specific authorization for cleanup and disposal of these PCBs prior to the start of CS3 as a modification to the requested approval for CS2.

Conducting sampling to verify completion of excavation/dredging activities, and to perform environmental monitoring during cleanup activities

The development and assessment of remedial alternatives, and selection of the final corrective action remedy, has been completed as part of the RCRA corrective action process under the Boeing Order. The final remedy selection was documented in Reference 8. EPA accepts the results of this work as meeting the no unreasonable risk standard for cleanup of PCB remediation waste under 40 C.F.R. § 761.61(c).

Backfilling and post-backfilling monitoring

The development and assessment of remedial alternatives, and selection of the final corrective action remedy, has been completed as part of the RCRA corrective action process under the Boeing Order. The final remedy selection was documented in Reference 8. EPA accepts the results of this work as meeting the no unreasonable risk standard for cleanup of PCB remediation waste under 40 C.F.R. § 761.61(c).

Treatment and discharge of return water from < 50 ppm sediments, soils, structures and debris

The definition of PCB remediation waste at 40 C.F.R. § 761.3 addresses the regulatory classification of water associated with dredged sediments. More specifically, the definition of PCB remediation waste includes, but is not limited to:

Environmental media containing PCBs, such as soil and gravel; dredged materials, such as sediments, settled sediment fines, and aqueous decantate from sediment.

Therefore, all water separated from dredged sediments subject to this approval is considered PCB remediation waste and is subject to either the applicable decontamination standards of 40 C.F.R. § 761.79, or the disposal requirements of 40 C.F.R. § 761.60(a) (See 40 C.F.R. § 761.61(b)(1)). However, EPA has provided special consideration for management of "materials" subject to a permit issued under the Clean Water Act Section 404, such as the USACE 10/404 permit. EPA considers the treatment and discharge to the Lower Duwamish Waterway of return water from < 50 ppm soils and sediments to be "management" in the context of the provisions of 40 C.F.R. § 761.61(b)(3), cited above. Since requirements for the treatment and subsequent discharge of return water associated with <50 ppm sediments are included in the USACE Section 10/404 permit, they also are authorized under TSCA pursuant to 40 C.F.R. § 761.61(b)(3).

Based on experience gained from work conducted under the first two construction seasons pursuant to References 2 and 4, Boeing has made significant revisions to the return water treatment system to ensure adequate treatment capacity remains available while still meeting requirements of the USACE Section 10/404 permit. The specific issues that have been addressed and the changes made to the return water treatment system are documented in Reference 7. Of particular interest to EPA is the addition of a large settling basin to replace eight (8) 20,000-gallon tanks used during Construction Season 1 (CS1). The settling basin will provide increased storage and surge capacity, as well as increased liquid retention time. This latter factor in turn will result in additional settlement of suspended solids. EPA is supportive of these changes. However, EPA recognizes that storage and treatment of aqueous PCB remediation waste in what amounts to a surface impoundment may pose particular risks of spills or releases that are more significant than corresponding risks from storage and treatment in tanks.

In evaluating these risks with respect to the specific wastes to be managed and the design of the settling basin, EPA considered the following issues:

- The capacity of the retention basin and the likely concentration of PCBs in the dredge return water to be managed in it;

Although the capacity of the retention basin is quite large (2,000,000 gallons, with an operational capacity of 800,000 gallons), the expected concentration of PCBs, at least on an average basis, is expected to be quite low. Further, the solids expected to be accumulated in the retention basin are not expected to be materially different than soils previously stored in the area where the retention basin is constructed. On the balance, the size and the increased performance of the overall dredge return water treatment system afforded by the new retention basin, and the expected low concentration of PCBs in the return water and associated solids to be managed supports EPA's conclusion that the size and capacity of the retention basin is justified.

- The engineering design of the retention basin;

The retention basin was constructed in place of a former soil stockpile area, which was equipped with a single 20-mil polyvinyl chloride (PVC) liner underlain by an 8 oz. geotextile. On top of the liner, an aggregate and an asphalt layer provide mechanical protection to the liner, and allow use of construction equipment to remove accumulated solids. While EPA generally prefers

double liners of more robust material than 20-mil PVC and with a leak detection system between the two liners, the existing design is adequate for management of low-concentration PCB remediation waste over a limited (1-2 year) period.

- Monitoring the operation of the retention basin;

To provide at least a basic means of detecting any significant failure of the single liner or the overall engineered structure, EPA requested and Boeing agreed to install 4-8 piezometers around the perimeter of the retention basin. While this system is not equivalent to the leak detection system typically required for double-lined surface impoundments, it should provide an early indication of any significant leak or failure of the system that would warrant taking the retention basin out of service for repairs. EPA has included a condition specifying requirements applicable to monitoring, recordkeeping and reporting associated with these piezometers. See the Discussion of Conditions section below for details.

- Decommissioning and closure of the retention basin.

Given the potential for leaks from the retention basin that might not be detected by the piezometer-based leak detection system, EPA will establish requirements prior to the start of CS3 for decommissioning and closure of the retention basin, as well as areas used for soil stockpiles, in this RBDA.

The specific technical requirements applicable to treatment and discharge of return water from <50 ppm soils and sediments are documented in the final design report (Reference 9), the Boeing Order (Reference 6), and in the revisions to the dredge water return system documented in Reference 7.

Treatment and discharge of return water from ≥ 50 ppm sediments, structures and debris

Water separated from dredged sediments with total PCB concentrations ≥ 50 ppm are not eligible to be “managed” under the provision of 40 C.F.R. § 761.61(b)(3). However, EPA has evaluated the specific technical requirements for treatment and discharge of this water documented in the final design report (Reference 9) and the Boeing Order (Reference 6), and finds that they can be considered to be within the scope of decontamination activities authorized by 40 C.F.R. § 761.79(b). Since dredging of ≥ 50 ppm sediments will not occur until CS3, EPA will update this RBDA accordingly before the start of CS3. As part of this anticipated update, EPA expects that the treatment and discharge of this water will continue to be authorized by 40 C.F.R. § 761.79(b).

Transloading activities, including absorption/stabilization of residual liquids for sediments, structures and debris contaminated with PCBs <50 ppm

Since all of the sediments, structures and debris that will be managed at the Transload facility during CS2 will have PCB concentrations at less than 50 ppm, the storage for disposal requirements of 40 C.F.R. § 761.65 do not apply. However, given the large volume of materials to be managed through the Transload facility, and the proximity of these activities to the Duwamish waterway, EPA believes that it is appropriate to review the proposed activities as necessary to make a determination that they do not pose an unreasonable risk of injury to health or the environment as part of its overall evaluation of the project. EPA has reviewed the proposed management of sediments, structures and debris at the

Transload facility documented in Section 4.0 and Appendix B of Boeing's RBDA application (Reference 5). Based on its review, EPA identified two issues in Boeing's proposal that warrant specific consideration. These include addition of absorbents to sediments, structures and debris prior to transfer to rail cars or trucks for off-site disposal, and management of decontamination liquids during final cleanup of the Transload facility.

TSCA requires that liquids in contact with non-liquid PCBs be managed at the concentration of the PCBs in the phase with the highest PCB concentration, or separated and decontaminated or disposed of accordingly. Further, 40 C.F.R. § 761.50(a)(2) prohibits processing of liquid PCBs into non-liquid forms to circumvent the high-temperature incineration requirements of 40 C.F.R. § 761.50(a)(2). EPA recognizes that generation of water in contact with PCB remediation waste is inherent in sediment dredging projects such as this. Further, EPA recognizes that given the large volume of sediments to be managed, there are practical limitations in the degree to which entrained water can be separated from dredged sediments. In light of these practical constraints while still ensuring full compliance with the stated TSCA requirements, EPA is authorizing the addition of absorbent materials (e.g., cement kiln dust) to PCB remediation waste at the Transload facility provided that entrained water is drained from the dredged sediments to the extent practicable via ordinary means (gravity draining) while on the sediment barges. These same considerations apply to debris and structures that may be co-generated with contaminated sediments.

EPA finds that the proposed Transloading activities, including absorption/stabilization of residual liquids for sediments contaminated with PCBs <50 ppm, do not pose an unreasonable risk of injury to health or the environment.

Final disposal of soils, sediments structures and debris contaminated with PCBs at concentrations < 50 ppm, including use of sediments as alternate daily cover

The self-implementing cleanup requirements of 40 C.F.R. § 761.61(a) provide authorization to dispose of bulk PCB remediation waste with PCB concentrations < 50 ppm in a facility permitted, licensed or registered by a State to manage municipal solid waste subject to 40 C.F.R. Part 258, or municipal non-hazardous waste subject to 40 C.F.R. §§ 257.5 through 257.30, as applicable. Since this cleanup is not being conducted as a self-implementing cleanup, the provisions of 40 C.F.R. § 761.61(a) do not apply. However, disposal of < 50 ppm bulk PCB remediation waste is nevertheless appropriate for this project, so EPA is providing the same authorization through this risk-based disposal approval under the authority of 40 C.F.R. § 761.61(c).

The TSCA regulations do not speak directly to disposal of bulk PCB remediation waste as alternate daily cover that is otherwise eligible for disposal in a facility permitted, licensed or registered by a State to manage municipal solid waste subject to 40 C.F.R. Part 258, or municipal non-hazardous waste subject to 40 C.F.R. §§ 257.5 through 257.30, as applicable. Since by definition, materials disposed of as alternate daily cover are not covered by a daily cover, it is possible that PCB remediation waste disposed of as alternate daily cover could pose an unreasonable risk of injury to health or the environment. For example, if such wastes were to remain exposed to the elements in the arid Eastern Oregon or Washington climate, exposed to high temperatures or high winds, they could become desiccated and therefore dispersible. Boeing's risk-based disposal approval application presents a defensible case that, despite these potential concerns, disposal of PCB bulk product waste from this project with PCB concentrations < 50 ppm is both desirable and appropriate. EPA therefore is providing

authorization to dispose of PCB remediation waste as alternate daily cover. EPA is, however, requiring that Boeing provide written documentation from the state oversight agency (in this case, the Oregon Department of Environmental Quality) that this practice is acceptable with respect to applicable solid waste landfill criteria.

As noted above, structures or debris which may be generated as part of this project are not suitable for disposal as alternate daily cover. Therefore, structures and debris are explicitly excluded from this authorization to dispose of bulk PCB remediation waste with PCB concentrations <50 ppm as alternate daily cover. Structures or debris must be directly disposed of as authorized by Condition 8, and not stockpiled or disposed of as alternate daily cover.

Final disposal of sediments, structures and debris contaminated with PCBs at concentrations ≥ 50 ppm

As noted above, Boeing has proposed revisions to the cleanup and disposal requirements applicable to sediments with PCB concentrations ≥ 50 ppm. EPA expects to make a final decision regarding these proposed revisions at a later date. Since the scope of work authorized through this approval is limited to project areas characterized by PCB contamination < 50 ppm, EPA is not providing any authorization for disposal of PCB remediation waste with as-found concentrations ≥ 50 ppm in the current approval.

Decontamination of structures and equipment in contact with PCB remediation waste during cleanup activities

Although PCB remediation waste with PCB concentrations <50 ppm expected to be managed during the first construction season of this project are not subject to the storage for disposal requirements of 40 C.F.R. § 761.65 or the corresponding closure requirements, appropriate cleanup or decontamination of structures and equipment that may come in contact with PCB remediation is necessary to ensure that the overall project does not pose an unreasonable risk of injury to health or the environment. EPA is establishing a "clean debris surface" as the performance standard for decontamination of equipment and structures in contact with PCB remediation waste, "borrowing" this standard from the alternate treatment standards for hazardous debris under the RCRA Land Disposal Restriction program. EPA is establishing this standard under the TSCA authority of 40 C.F.R. § 761.61(c), and in doing so, is not making any assertion that PCB remediation waste, or equipment or structures in contact with it, under this approval is subject to RCRA land disposal restriction treatment standards.

Discussion of Conditions

1. Boeing is authorized to perform cleanup of PCB remediation waste, associated verification sampling, backfilling and post-backfilling monitoring as documented in Boeing's RBDA application (Reference 5) pursuant to the specific provisions of 40 C.F.R. § 761.61 documented in Enclosure 2 to this approval, and as approved by EPA under the Boeing Order (Reference 6) that are associated with the Construction Season 2 (CS2) dredging work elements. (See Figure 1 in Appendix A the RBDA application, Reference 5). Dredging and debris removal subject to this approval must be completed by March 30, 2014, with shipment for off-site disposal of PCB remediation waste subject to this approval to be complete by a target date of 60 days following completion of excavation activities. Boeing may request an extension to these dates.

This condition provides overall authorization under TSCA for the project for Construction Season 2 (CS2). EPA is not providing approval for the cleanup or disposal of sediments associated with CS3 at this time, including areas identified as "Early Action Areas" and that contain PCBs at concentrations \geq 50 ppm. See discussion of this point in the section "Specific Elements of the Project" in the Statement of Basis. As discussed above, some of the work activities subject to TSCA requirements are authorized through this approval under the risk-based disposal approval of 40 C.F.R. § 761.61(c), with the remainder subject to authorization under other provisions of 40 C.F.R. § 761.61 as enumerated in the section entitled "Specific elements of the cleanup project." All work associated with this project, including but not limited to work subject to TSCA requirements, is subject to the Boeing Order.

EPA is establishing a schedule for completion of cleanup work under this approval, and for completion of off-site shipment for disposal. EPA's intent in establishing this schedule is to ensure timely completion of the authorized work. Since off-site shipment of PCB remediation waste may not be completed concurrent with completion of cleanup activities, some additional time will be required. EPA is establishing a period of 60 days following completion of excavation activities to complete off-site shipment for disposal, with a provision for modification if necessary.

2. At least 60 days prior to the scheduled start of Construction Season 3 (CS3), or at such other time as agreed to by EPA, Boeing will provide EPA with a summary report of activities during CS2, issues or problems that were encountered, documentation of any changes or updates to plans for the CS2 activities. This report will contain a request for modification of this approval pursuant to Condition 16 to include authorization for CS3 construction activities, and to make such other changes as necessary or appropriate. This condition supersedes Condition 2 in the December 20, 2012 RBDA (Reference 2) with respect to reporting requirements applicable to the 2013/2014 and 2014/2015 construction seasons.

This condition establishes a mechanism to review experiences gained and "lessons learned" during the completion of work subject to this approval, to make appropriate adjustments to plans and schedules for the subsequent construction season, and to update or modify this approval accordingly. This condition also provides a mechanism to update this approval prior to CS3, and to incorporate a final decision regarding cleanup and disposal of PCB remediation waste documented as having as-found concentrations \geq 50 ppm.

3. This approval will remain in effect for the duration of the Boeing Order (Reference 6) with respect to work requirements subject to the requirements of 40 C.F.R. § 761.61. Following completion of such work under the Boeing Order, including post-backfilling monitoring, Boeing may provide a written request to EPA to terminate this approval.

This condition ensures that this approval remains in place and effective for the full duration of the project as established by the Boeing Order and this approval.

4. Boeing will ensure that all trucks or rail cars used to transport PCB remediation waste under this approval or as otherwise authorized pursuant to 40 C.F.R. § 761.61 will have adequate liners, or are otherwise sufficiently watertight, to prevent any incidental liquids from leaking from the boxes or containers during transport.

Even though Condition 6 below provides authorization to add absorbents to dredged sediments at the Transload facility, and establishes the performance standard of no visible free liquids, it is possible that load separation may occur during transport. Similar concerns exist for transport of soils. EPA is establishing this condition to ensure that unintended release of separated liquid PCB remediation waste does not occur during transport for final disposal of PCB remediation waste associated with this project.

5. Boeing will ensure that best management practices are used for gravity dewatering of dredged sediments within sediment barges as described in (Reference 5) for purposes of minimizing the quantity of residual liquids remaining in sediments when transferred to the Transload facility, consistent with project schedules, equipment limitations, and properties of the dredged sediments.

This condition establishes performance requirements for dewatering dredged sediments that minimizes the quantity of liquids PCB remediation waste to which absorbents will be added consistent with practical limitations of effectively dewatering bulk quantities of dredged sediments.

6. Boeing is authorized to add absorbents (e.g., cement kiln dust) to dredged sediments within the Transload facility for purposes of absorbing residual free liquids remaining in dredged sediments. Sufficient absorbent material will be added and appropriately mixed to eliminate visible free liquids before removal from the vault. Boeing is not authorized to add absorbents to any other aqueous PCB remediation waste at the Transload facility, such as truck/rail car wash water, storm water collected from areas outside of the containment vault which may have been in contact with contaminated sediments, or final decontamination water from the Transload facility generated pursuant to Condition 7 of this Approval. All aqueous PCB remediation waste generated as part of this project at the Transload facility other than residual free liquids in dredged sediments must be managed according to one of the following options:

- Collected on-site and shipped via Department of Transportation-compliant containers or tank trucks to an off-site facility for decontamination as required and discharged pursuant to 40 C.F.R. § 761.79(b)(1)(ii) or (iii);
- Collected, and decontaminated (pre-treated) on-site as required and discharged to the King County Publically Owned Treatment Works. If this option is selected, Boeing must provide EPA with a current copy of King County's pretreatment permit that demonstrates the permit contains an enforceable limit for PCBs, prior to any discharge to the King County POTW;
- Collected on-site, decontaminated on-site and sampled as necessary to demonstrate compliance with the decontamination standard at 40 C.F.R. § 761.79(b)(1)(iii), and added to sediments for stabilization in the containment vault as "clean" water authorized for unrestricted use;
- Collected on-site, decontaminated on-site and sampled as necessary to demonstrate compliance with the decontamination standard at 40 C.F.R. § 761.79(b)(1)(iii), and shipped to the Columbia Ridge landfill for use as "clean" water for dust control as permitted by the Oregon Department of Environmental Quality.

Prior to the placement of any PCB remediation waste in the Transload facility, Boeing will provide EPA with a current copy of the Solid Waste Facilities Permit for Storage and Treatment Piles as an update to the copy of Permit PR0034434 provided in Boeing's application for CS2.

Any sampling and analysis pursuant to this condition that is not otherwise subject to a written sampling and analysis plan approved by EPA under the Boeing Order must be conducted under a written sampling and analysis plan, and a project-specific quality assurance project plan that ensures data will be of acceptable quantity and quality for their intended decision-making uses. Boeing will make such plans available to EPA upon request.

Water generated from decontamination activities at the Transload facility must be managed according to one of the options enumerated above. Any aqueous PCB Remediation Waste which Boeing voluntarily elects to remove from the containment vault may be managed according to any of the above options.

EPA is establishing several options for management of residual water in dredged sediments at the Transload facility which ensure compliance with applicable provisions of 40 C.F.R. § 761.61, but which do not involve impermissible conversion of liquid PCB remediation waste to a non-liquid form to avoid otherwise applicable disposal requirements. The first two of these options involve decontamination, either off-site or on-site, and appropriate discharge, such as to a publically-owned treatment works. Such decontamination may be conducted on a self-implementing basis using one or more of the procedures enumerated at 40 C.F.R. § 761.79(b). EPA is requiring that Boeing provide written documentation that appropriate pre-treatment requirements are in place prior to discharge to the King County POTW from the Transload facility, since Boeings RBDA application did not indicate whether or not appropriate pre-treatment is in place to ensure compliance with 40 C.F.R. § 761.79(b)(1)(ii).

The third and fourth of these options involve decontamination to a 0.5 µg/L standard, which allows unrestricted use ("clean" water). If PCB remediation waste is decontaminated to this standard, it may be managed via addition of absorbents without any issue that doing so would be impermissible processing of liquid PCB remediation waste to a non-liquid form to circumvent otherwise applicable disposal requirements.

EPA is including a requirement that any sampling and analysis associated with this condition is conducted under a written sampling and analysis plan and a quality assurance project plan. These plans can either be existing plans approved by EPA under the Boeing Order, or separate plans specific to this activity.

7. All equipment and structures that have been in contact with liquid or non-liquid PCB remediation waste subject to this approval must be disposed of or decontaminated following completion of work under this approval. All disposable equipment or materials must be disposed of in a facility permitted, licensed or registered by a State to manage municipal solid waste subject to 40 C.F.R. Part 258, or municipal non-hazardous waste subject to 40 C.F.R. §§ 257.5 through 257.30, as applicable. Non-disposable equipment and structures must be decontaminated using mechanical means or pressure washing to achieve a "clean debris surface" as defined in 40 C.F.R. § 268.45, Table 1, footnote 3. Water generated from decontamination activities may be managed in the dredge return water treatment system or according to either of the first two bulleted options in Condition 6.

Boeing will ensure that any decontamination conducted pursuant to this approval will be conducted in compliance with the requirements of 40 C.F.R. 761.79(e)-(g).

EPA is establishing this condition to ensure that all equipment and structures that are in contact with PCB remediation waste associated with this approval are appropriately decontaminated. These requirements generally follow similar requirements under 40 C.F.R. § 761.61(a) for self-implementing cleanups. Since this project is not conducted under 40 C.F.R. § 761.61(a), these requirements are expressly included in this condition under the authority of 40 C.F.R. § 761.61(c).

This condition also ensures that regulatory requirements pertaining to limitation of exposure and control of releases during decontamination, sampling and recordkeeping, and disposal of decontamination waste and residues are complied with.

8. Boeing is authorized to dispose of bulk PCB remediation waste with PCB concentrations < 50 ppm in a facility permitted, licensed or registered by a State to manage municipal solid waste subject to 40 C.F.R. Part 258, or municipal non-hazardous waste subject to 40 C.F.R. §§ 257.5 through 257.30, as applicable.

Although 40 C.F.R. § 761.61(a) provides similar authorizations for bulk PCB remediation waste generated from self-implementing cleanups, this project is not being conducted under the authority of 40 C.F.R. § 761.61(a). Nevertheless, this method of final disposal are appropriate to PCB remediation waste to be generated by this project, so EPA is establishing this disposal authorization under the risk-based disposal approval authority of 40 C.F.R. § 761.61(c).

EPA notes that Boeing's application (Reference 5) documents that dredged material from work performed pursuant to this approval will be transported to either the Columbia Ridge landfill in Oregon, or the Wenatchee landfill in Washington, or another Subtitle D landfill. The application provides a copy of the current permits for the Columbia Ridge and Wenatchee landfills.

EPA notes that it is not making a final decision regarding cleanup and disposal of PCB remediation waste with as-found concentration ≥ 50 ppm scheduled for CS3 in this approval. EPA expects to modify this condition or establish such other conditions as may be necessary to provide authorization for cleanup and disposal of PCB remediation waste with as-found concentration ≥ 50 ppm as part of a modified approval for CS3.

9. Prior to rail or truck shipment of any PCB remediation with total PCB concentrations less than 50 ppm for disposal as alternate daily cover at a landfill authorized to receive such material pursuant to Condition 8, Boeing will provide to EPA a copy of the approval or other documentation provided to the receiving landfill by the applicable jurisdiction (jurisdictional health department or state agency) to accept and dispose of PCB remediation waste as alternate daily cover.

If such approval or documentation establishes a demonstration or evaluation period associated with disposal of PCB remediation waste as alternate daily cover, Boeing will provide a copy of any communication related to this demonstration period to EPA pursuant to Condition 17 during the demonstration period, as well as any evaluation or disposition of the demonstration (e.g., termination or extension of the demonstration approval, or issuance of any final approval for acceptance of PCB remediation waste for disposal as alternate daily cover).

If alternate daily cover is reasonably expected to remain stockpiled at the receiving landfill for more than 30 days, Boeing will provide written documentation to EPA that appropriate controls are in

place to address potential wind dispersal of stockpiled alternate daily cover, and that appropriate run-off controls are in place. Acceptable documentation includes, but is not limited to, a landfill operating plan and associated appendices covering storm water management and fugitive dust control.

With respect to TSCA requirements, EPA has determined that disposal of PCB remediation waste at the Columbia Ridge landfill or the Wenatchee landfill as alternate daily cover does not pose an unreasonable risk of injury to health or the environment, provided that any on-site stockpiling does not occur over an extended period of time and appropriate dispersal controls are in place. EPA is establishing a notification requirement to ensure that EPA's authorization for this method of disposal is authorized by, and does not conflict with any applicable requirements which may be established by the Oregon Department of Environmental Quality.

During information discussions of this project with Boeing on December 15, 2012, Boeing informed EPA that the initial approval expected from ODEQ for acceptance of PCB remediation waste for disposal as alternate daily cover at the Columbia Ridge landfill will establish a demonstration period, during which ODEQ will evaluate the performance of such alternate daily cover. EPA is establishing a reporting requirement under this condition to ensure that EPA has access to the results of any evaluations during and following the demonstration period. EPA is retaining this requirement for disposal of PCB remediation waste under this third approval associated with the project, but has revised the language to be generic and independent of the particular landfill which may receive PCB remediation waste associated with this project pursuant to Condition 9.

10. Boeing shall document the surveyed elevation of a fixed reference point on each piezometer to an accuracy of 0.3 cm (0.01 foot). Boeing shall perform monitoring of the retention basin piezometers documented in Reference 7 no less frequently than weekly beginning with the start of dredging operations and ceasing once all dredge return water and accumulated solids have been removed from the basin at the end of CS2. All measurements shall be recorded relative to the fixed reference point on each piezometer. Boeing shall concurrently monitor the elevation of the free liquid surface in the basin, referenced to the same datum as the fixed reference points on the various piezometers, and for piezometers 1, 2, 7 and 8 documented in Figure 2 in Reference 7, the level of any ponding water external to the retention basin in the vicinity of each piezometer, with respect to the fixed reference point of the corresponding piezometer. Boeing shall provide notice to the EPA project manager according to Condition 17 if any of the following conditions are met:

- For Piezometers 1, 2, 7 and 8, report any positive differential water level greater than one inch (1.0") between the piezometer and any water ponding external to the retention basin OR any ponding water external to the retention basin following pumping of accumulated water that is not explained by precipitation and that is above the minimum pumping level.
- For Piezometers 3, 4, 5 and 6, report any water level above the minimum detectable level for the instruments used,

As discussed in the section "Specific elements of the cleanup project" above, EPA has determined that at least some form of monitoring the retention basin included as part of the dredge return water treatment system is appropriate to ensure that any significant leak or failure of the engineered structure is identified in a timely manner. This condition provides the specific requirements for monitoring of piezometers installed in the retention basin for this purpose.

The rationale for these conditions is that if there is a significant release from the retention basin during operations, due to failure of the basin liner, an increase in water levels should be observed in installed piezometers. However, the efficacy of the piezometers for this purpose may be confounded by water ponding outside of the retention basin. The retention basin itself was constructed through modification of the existing stockpile areas, used for management of soils and debris pursuant to Reference 4. For this original purpose, the area was graded for purposes of surface drainage to catch basins. Although the catch basins underneath and adjacent to the retention basin have been blocked off and are not functional for CS2 activities, the surface grading of the asphalt surface upon which the basin is constructed remains. Therefore, rain water ponding external to the retention basin is expected to seep under the ecology block perimeter wall of the basin. Thus, certain of the piezometers (numbered 1, 2, 7 and 8 in Figure 2 of Reference 8) are influenced both by external ponding and potential leaks from the basin itself. EPA lacks any data or engineering analysis that documents the basis for any criteria, if any, that would allow piezometer measurements to distinguish leaks from hydraulic head influences external to the basin. Even for the balance of the piezometers (numbered 3, 4, 5 and 6 in Figure 2 of Reference 8), water from small leaks might not be detectable, since water may seep underneath the ecology block perimeter as fast as it is leaking, resulting in no net increase in hydraulic head as measured in the piezometers.

If leaks from the basin were to occur, at least in the vicinity of piezometers 1, 2, 7 and 8, leaked water may well be more easily observed as it collects outside of the retention basin perimeter following the grade of the original asphalt surface. EPA understands that standard practice during CS2 will be to pump ponding water external to the retention basin, such as from accumulated natural precipitation, into the retention basin for processing and eventual discharge to the Duwamish waterway. Observation of the return of ponded water in the absence of precipitation and following this pumping may prove effective in documenting leaks from the basin. For this reason, EPA is establishing the second observation requirement (following "OR" in the first bulleted item in Condition 10) for monitoring of the basin in the vicinity of piezometers 1, 2, 7 and 8.

To put the potential environmental effect of releases from the impoundment in context, EPA examined data from CS1 that are believed to be reasonably representative of material that will be managed in the retention basin during CS2. See Reference 15. These data, reflecting the material from the Tri-Flow unit, indicate PCB levels that are quite low, on the order of 1.4 ppb. This level is well below that of the crushed concrete underlying the retention basin, placed following demolition of the former Plant 2 building to the north of the retention basin. While EPA expects the retention basin to be constructed and operated in a manner that prevents releases from occurring, should they occur nevertheless, they should not pose a significant risk of injury to health or the environment.

EPA is establishing only monitoring and reporting requirements at this point in time. Should data indicate the potential for a release or structural failure, EPA will evaluate the results on a case-by-case basis and determine what response actions may be necessary to ensure that operation of the retention basin does not pose an unreasonable risk of injury to health or the environment.

The overall authorization for the dredge return water system, as noted above, is pursuant to 40 C.F.R. § 761.61(b)(3). EPA is establishing this additional monitoring requirement for the retention basin pursuant to 40 C.F.R. § 761.61(c) as necessary to ensure operation of the retention basing does not pose an unreasonable risk of injury to health and the environment.

11. Boeing will ensure that a copy of this approval is provided to members of its field engineering team (AMEC Environment and Infrastructure, Inc. and its subconsultants, Dalton, Olmsted and Fuglevand and its subcontractors, Envirocon, Inc. and its subcontractors, Waste Management, Inc., and Regional Disposal Company) (Field Team) responsible for conducting work subject to requirements of the approval. Boeing will ensure that any contracts it issues to members of the Field Team and any associated contract directions are consistent with the requirements of this approval. Boeing is responsible for ensuring compliance with this TSCA Risk Based Disposal Approval.

This condition emphasizes Boeing's responsibility for acts or omissions of its contractors.

12. Boeing will ensure that all field work associated with this project conducted by Boeing or its Field Team is conducted under written site-specific health and safety plans. Boeing will ensure that these plans document appropriate training and personal protective equipment required for all personnel that may be exposed to PCBs during work associated with this project. Boeing will make available copies of such plans to EPA upon request.

Boeing's RBDA application documents general health and safety considerations in Section 1.4, but it does not include a specific health and safety plan. Section 1.5 does, however, include a statement in Section 1.5 that "The Project will be conducted in accordance with site-specific Health and Safety Plans (HASPs)..." Further, Boeing's RBDA does not discuss any training requirements for personnel conducting work under this approval. Both are important to ensure that work is conducted safely and in a manner that does not pose an unreasonable risk of injury to health or the environment. This condition ensures that a health and safety plan is prepared and that it includes elements that the EPA considers necessary. EPA is not including an explicit requirement for EPA's review and approval, but this condition does ensure that EPA has access to the plan. If EPA should identify deficiencies that require revision, EPA may establish necessary revisions through modification of this approval pursuant to Condition 17.

13. Nothing in this approval relieves Boeing of any obligation to comply with the Boeing Order, any other EPA or Ecology administrative action, or any statutory requirements, or rules and regulations applicable to the activities subject to this approval.

This condition establishes that this approval under TSCA does not relieve Boeing of any other obligation that it may have with respect to the approved activities.

14. Within seven (7) days following the effective date of this approval, Boeing will provide EPA with written or e-mail notice of its project manager responsible for overall implementation of work subject to this approval. The initial EPA TSCA project manager is identified in Condition 17. The respective project managers will be responsible for timely and routine communication regarding implementation of this approval, including notification pursuant to Condition 15. For matters otherwise reportable to the EPA RCRA project manager under the Boeing Order, concurrent notification via e-mail is acceptable and encouraged.

Based on experience during the first construction season under the initial RBDA (Reference 2), EPA and Boeing recognized the need for enhanced communication with respect to this approval based on a

project management approach. EPA is establishing this condition, as well as conforming changes to Condition 16 below, to reflect this objective.

15. If at any time before, during, or after conduct of activities subject to this approval, Boeing possesses or is otherwise made aware of any data or information (including but not limited to site conditions that differ from those presented in the application) that activities approved herein may pose an unreasonable risk of injury to health or the environment, Boeing must report such data or information via facsimile or e-mail to EPA within five working days at the project manager level, and in writing to the Regional Administrator within 30 calendar days of first possessing or becoming aware of such data or information. At his or her sole discretion, the EPA project manager may waive the written reporting requirement for those issues that are determined to be minor, or can be timely resolved without modification of this Approval. Boeing shall also report in the same manner, new or different information related to a condition or any element of the approved activities if the information is relevant to this approval. EPA may direct Boeing to take such actions it finds necessary to ensure the approved storage activities do not pose an unreasonable risk of injury to health or the environment. Boeing shall follow such direction until written approval is obtained from the EPA that finds the condition(s) requiring such direction no longer poses an unreasonable risk of injury to health or the environment.

This condition ensures that if any information not available to EPA at the time this approval is issued becomes known, and it will be made available to the EPA for purposes of ensuring that activities subject to this approval continue to pose no unreasonable risk of injury to health or the environment. This condition also ensures EPA's ability to make changes to the storage activities, including withdrawing approval for storage, as necessary to ensure no unreasonable risk of injury to health or the environment.

16. EPA reserves the right to modify or revoke this approval based on information provided pursuant to Condition 15, or any other information available to EPA that provides a basis to conclude that activities covered by this approval pose an unreasonable risk of injury to health or the environment. Boeing may request modification of this approval by providing a written request to EPA. If the EPA agrees with a request for modification, the EPA will provide written approval to Boeing. Prior to obtaining written approval of a modification request, Boeing shall comply with the existing approval conditions.

This condition establishes a mechanism whereby this approval may be modified by EPA, either independently or upon request to EPA.

Condition 17, not restated here, is self explanatory.